

**STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF CONSERVATION
DIVISION OF FORESTRY**

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FOREST FIRE REPORT

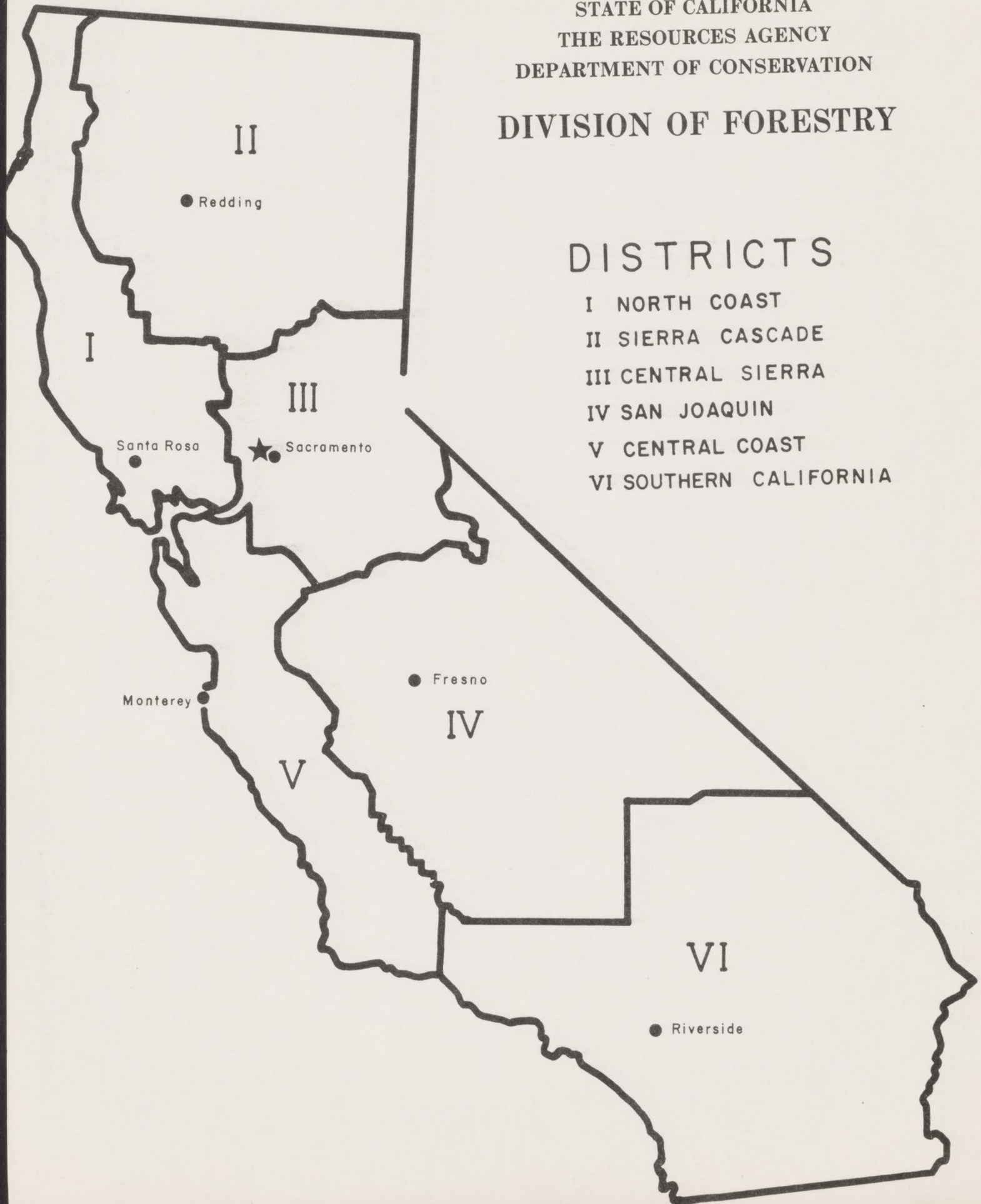
1968

**THE CLARKE - McNARY
REPORT**

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF CONSERVATION
DIVISION OF FORESTRY

DISTRICTS

- I NORTH COAST
- II SIERRA CASCADE
- III CENTRAL SIERRA
- IV SAN JOAQUIN
- V CENTRAL COAST
- VI SOUTHERN CALIFORNIA



California Division of Forestry
Forest Fire Report
1968

1. CHARACTER AND EXTENT OF THE FIRE SEASON

During the twelve months of 1968 the California Division of Forestry experienced the highest level of Forest Fire incidence on record while the acreage burned and fire weather severity were below normal.

A. Fire Weather Severity

The weather conditions preceding the 1968 season were anything but encouraging. Total precipitation amounts through the winter were well below normal everywhere in the state. The month of April set the stage for the events to follow. Not only was this a virtually rainless month in much of the state but it also brought persistent drying winds that exhausted the meager moisture reserves. By the first of May the snow-pack had disappeared and grass in the foothill areas was already curing. Declared fire season was in effect throughout the state by May 1---a relatively early date. At this time a survey of the pre-season fire weather severity was made and this was above normal except in a portion of the state that received over eighty percent of seasonal precipitation.

June and July were almost uniformly hot and dry except for the southern coast which was cooled by marine air. There was also one significant rainfall incident in southern California from a tropical air intrusion during the latter part of July. Fire danger was above normal almost everywhere except in coastal southern California. It was considerably above normal along the northern and central coastal regions.

August started as a continuation of the previous months. Then a weather event of major importance occurred. Not since the Columbus Day deluge of 1962 had there been such a far-reaching weather event in terms

of fire danger. This was the presence of the very cold upper level trough that influenced the weather of all of the state north of the latitude of Fresno for a two week period from the 11th to the 25th.

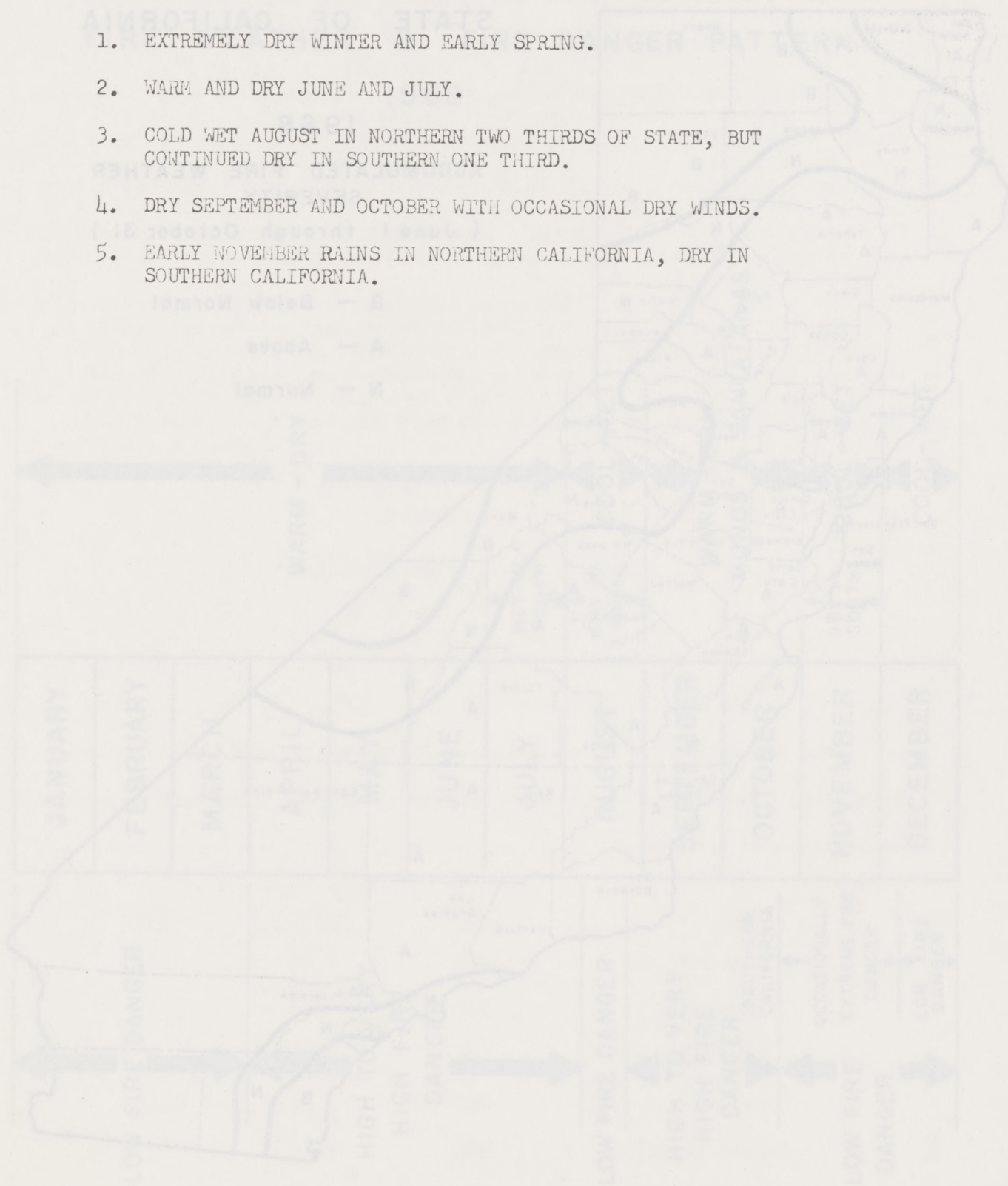
Unfortunately the onset of this cool trough was preceeded by a rash of thunderstorms that covered the coast range from Santa Barbara northward, concentrating in Mendocino and southern Humboldt counties on August 8. This outbreak of lightning fires was the most damaging weather occurrence of the entire season. But to offset the lightning damage there was benefit from the presence of this cool trough that was both short and long term. First, there were several consecutive low fire danger days that permitted forces to re-group. The long term effect took place in the timber areas where rain occurred in sufficient amounts to drop the timber buildup (an expression of long-term drying) to zero, so that the remainder of the season was almost like the start of a new one. During this period, storm total rainfall amounts as high as six inches were recorded in northern California.

September and early October were about normal periods of fire danger with no outstanding weather occurrences. Rain began to occur at intervals beginning early in October and the fire season was terminated by stages until early in November when only southern California remained in season. There followed a six week wait until the latter half of December when rain fell in sufficient quantity to end the season there. During this six week period there were several periods of extreme fire danger due to strong offshore winds.

In summary, the average of twelve sample fire danger rating areas statewide showed 1968 to be in seventh place, in order of severity, for the ten year period 1959 - 1968. But while the state as a whole recorded

below normal overall severity, two of the sample areas recorded all-time peaks of severity. Highlights of the season may be summarized as follows:

1. EXTREMELY DRY WINTER AND EARLY SPRING.
2. WARM AND DRY JUNE AND JULY.
3. COLD WET AUGUST IN NORTHERN TWO THIRDS OF STATE, BUT CONTINUED DRY IN SOUTHERN ONE THIRD.
4. DRY SEPTEMBER AND OCTOBER WITH OCCASIONAL DRY WINDS.
5. EARLY NOVEMBER RAINS IN NORTHERN CALIFORNIA, DRY IN SOUTHERN CALIFORNIA.



STATE OF CALIFORNIA

1968

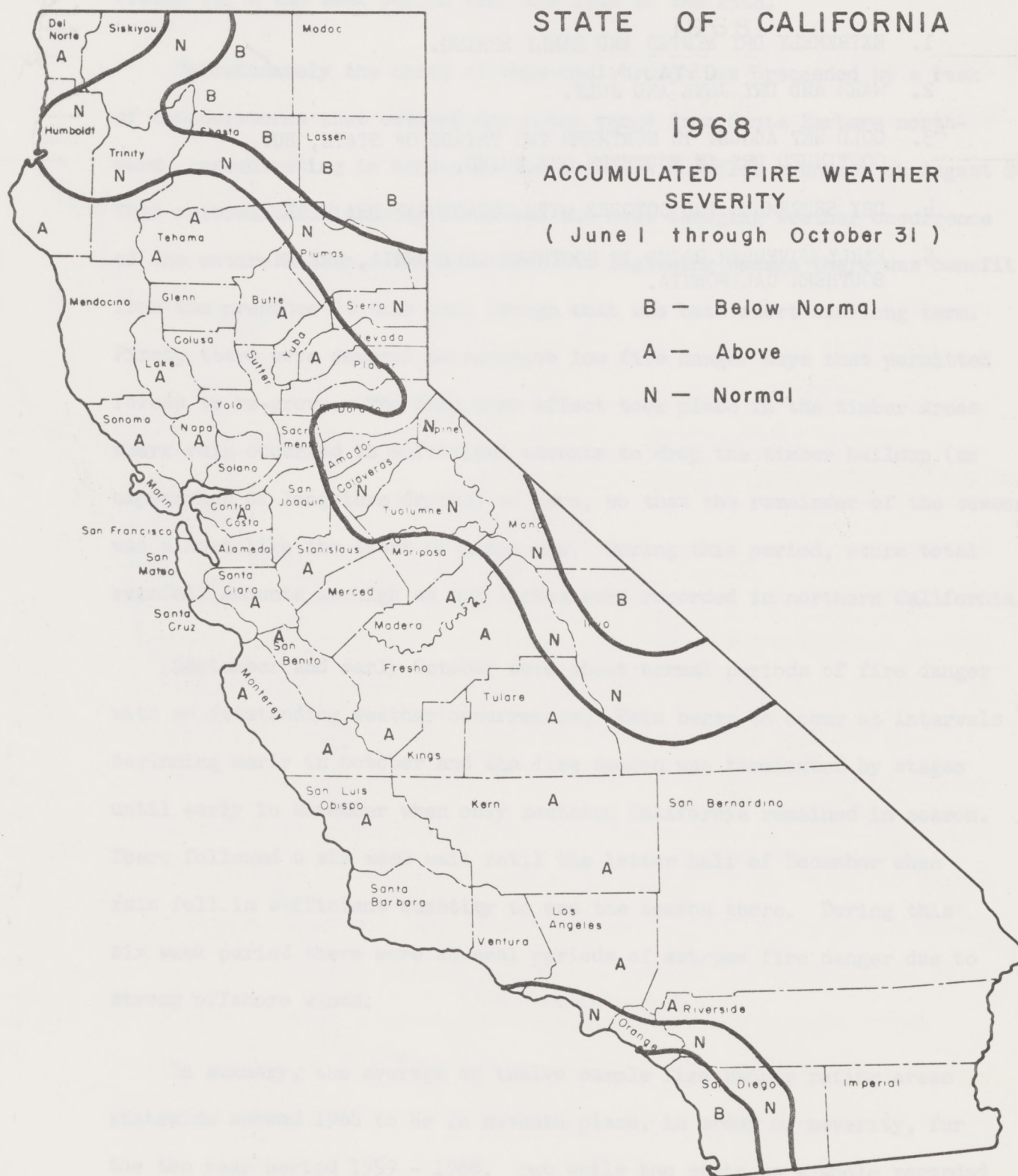
ACCUMULATED FIRE WEATHER SEVERITY

(June 1 through October 31)

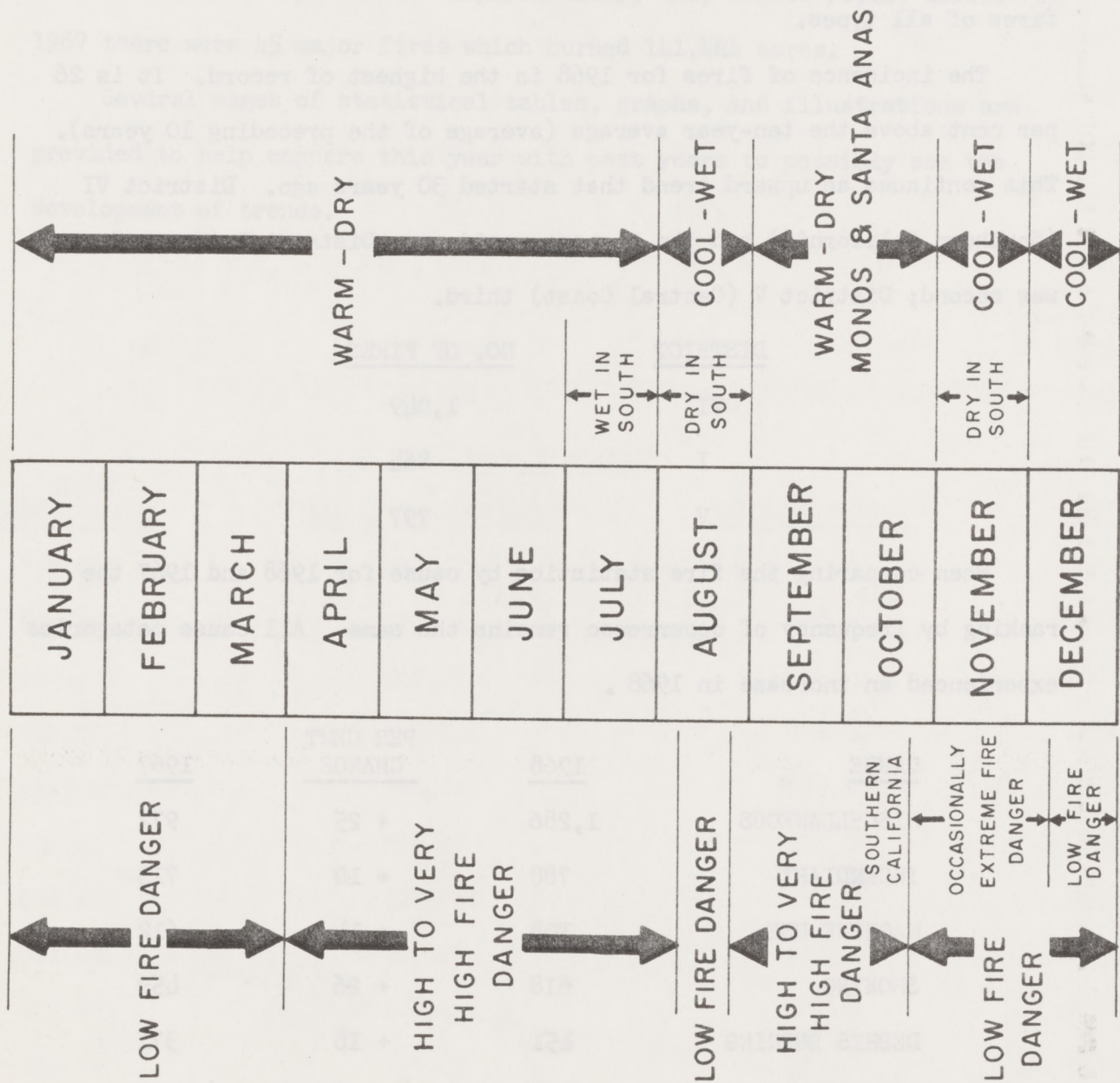
B — Below Normal

A — Above

N — Normal



FIRE WEATHER & FIRE DANGER PATTERN 1968



B. Fire Incidence And Acreage Burned

During the year 1968, the California Division of Forestry suppressed 4,387 Forest Fires; they burned 121,733 acres of forest, watershed, and rangelands classified as Zone I and II state responsibility and directly protected by the Division of Forestry.

Fires in structures, vehicles, refuse or similar materials frequently become Forest Fires if not extinguished quickly. 2,676 fires of this type occurred within Zone I and II state responsibility areas protected by the California Division of Forestry. Thus, the Division suppressed over 7,000 fires of all types.

The incidence of fires for 1968 is the highest of record. It is 26 per cent above the ten-year average (average of the preceding 10 years). This continues an upward trend that started 30 years ago. District VI (Southern California) had the highest incidence; District I (North Coast) was second; District V (Central Coast) third.

<u>DISTRICT</u>	<u>NO. OF FIRES</u>
VI	1,049
I	864
V	797

When comparing the fire statistics by cause for 1968 and 1967 the ranking by frequency of occurrence remains the same. All cause categories experienced an increase in 1968 .

<u>CAUSE</u>	<u>1968</u>	<u>PER CENT CHANGE</u>	<u>1967</u>
MISCELLANEOUS	1,286	+ 25	972
INCENDIARY	788	+ 10	713
MACHINE USE	708	+ 14	612
SMOKING	618	+ 26	459
DEBRIS BURNING	451	+ 18	371
LIGHTNING	414	+ 35	273
CAMP FIRE	122	+ 43	69

The area burned in 1968 was 121,733 acres--25 per cent less than the 163,378 acres burned in 1967 and 22 per cent less than the 10-year average.

Some comparative information about acreage burned by fires of different size classes is given in the table.

SIZE CLASS	1968	1967
E (300 - 1,000 Acres)	26,918	14,981
F (1,000 - 5,000 Acres)	44,814	23,329
G (Larger than 5,000 Acres)	18,415	103,134

During the year 72 major fires (300 acres or larger) occurred in Division of Forestry area of responsibility; they burned 90,147 acres. In 1967 there were 45 major fires which burned 141,444 acres.

Several pages of statistical tables, graphs, and illustrations are provided to help compare this year with past years to possibly see the development of trends.



FOREST FIRE STATISTICS
ALL CLARK-McNARY LANDS IN CALIFORNIA

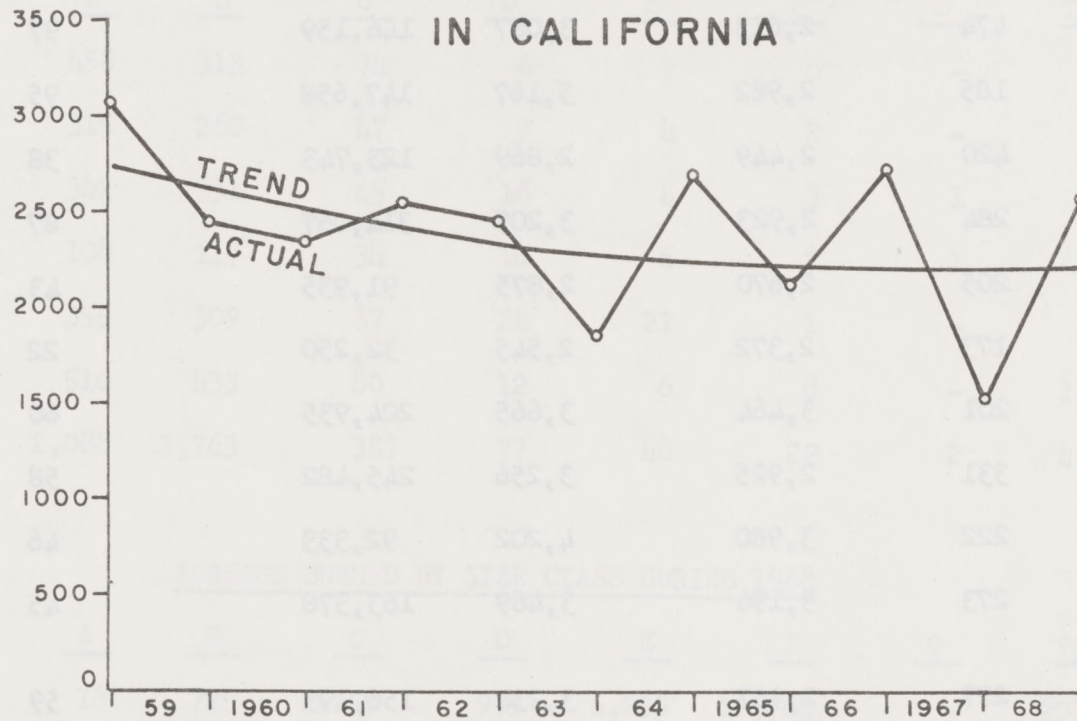
Fire Incidence

<u>YEAR</u>	<u>LIGHTNING FIRES</u>	<u>MAN-CAUSED FIRES</u>	<u>TOTAL NUMBER FIRES</u>	<u>NUMBER E, F, & G FIRES (300 ACRES OR LARGER)</u>
1958	750	2,359	3,109	82
1959	134	2,339	2,473	84
1960	553	1,820	2,373	29
1961	522	2,009	2,531	59
1962	410	2,038	2,448	34
1963	257	1,609	1,866	8
1964	265	2,441	2,706	30
1965	501	1,627	2,128	28
1966	274	2,489	2,763	27
1967	198	1,355	1,553	17
10-Year Average	386	2,009	2,395	40
1968	468	1,866	2,568	39

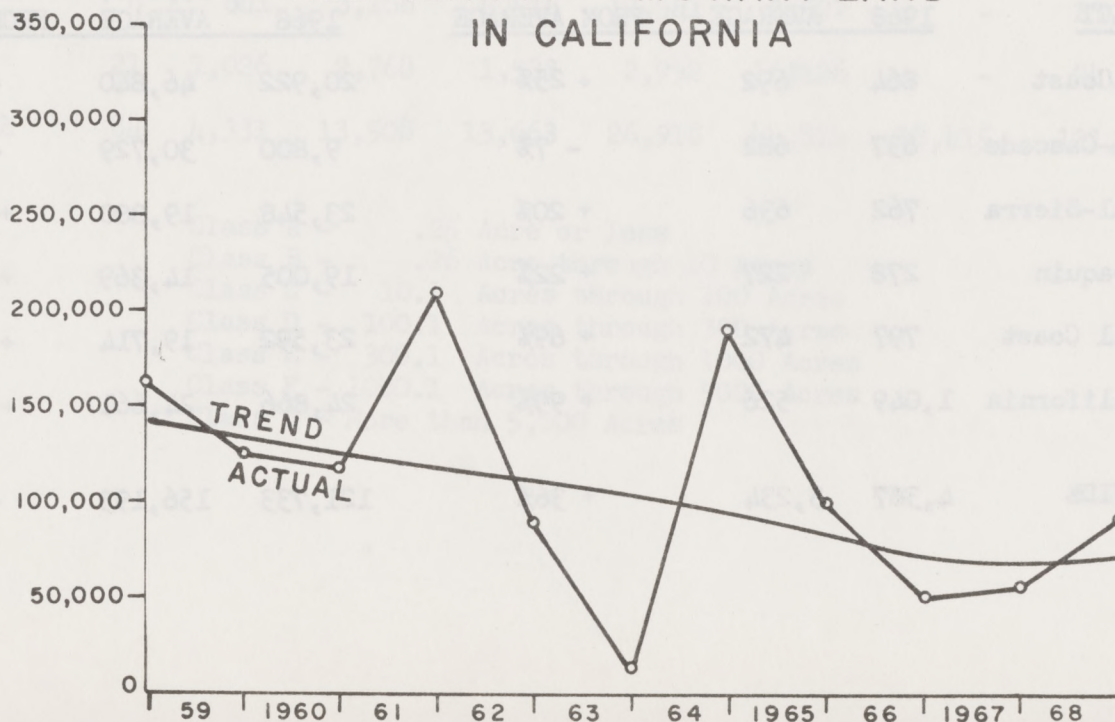
Acreage Burned

<u>YEAR</u>	<u>FORESTED LANDS</u>	<u>NON-FORESTED LANDS</u>	<u>TOTAL ACRES BURNED</u>
1958	9,153	154,765	163,918
1959	62,566	64,907	127,473
1960	26,691	94,821	121,512
1961	19,870	192,771	212,641
1962	7,543	82,686	90,229
1963	1,771	15,778	17,549
1964	33,922	158,541	192,463
1965	14,677	89,521	104,188
1966	6,981	45,753	52,734
1967	1,874	55,737	57,611
10-Year Average	18,505	95,528	114,032
1968	3,573	87,821	91,394

NUMBER OF FOREST FIRES ALL CLARKE - MC NARY LANDS IN CALIFORNIA



ACRES BURNED ALL CLARKE - MC NARY LAND IN CALIFORNIA



FOREST FIRE STATISTICS
CALIFORNIA DIVISION OF FORESTRY
DIRECT PROTECTION AREA - ZONES I AND II

STATEWIDE

<u>YEAR</u>	<u>LIGHTNING FIRES</u>	<u>MAN-CAUSED FIRES</u>	<u>TOTAL NO. FIRES</u>	<u>ACREAGE BURNED</u>	<u>CLASS E, F, & G FIRES (300 ACRES OR LARGER)</u>
1958	474	2,613	3,087	146,159	97
1959	185	2,982	3,167	147,658	95
1960	420	2,449	2,869	123,743	38
1961	284	2,923	3,207	314,057	87
1962	205	2,670	2,875	91,935	43
1963	173	2,372	2,545	32,250	22
1964	201	3,464	3,665	204,935	60
1965	331	2,925	3,256	245,482	58
1966	222	3,980	4,202	92,333	46
1967	273	3,196	3,469	163,378	45
10-year average	277	2,957	3,234	156,193	59
1968	414	3,973	4,387	121,733	72

BY DISTRICT

<u>DISTRICT</u>	<u>INCIDENCE</u>			<u>ACRES BURNED</u>		
	<u>1968</u>	<u>1958-67 AVERAGE</u>	<u>DEVIATION FROM AVERAGE</u>	<u>1968</u>	<u>1958-67 AVERAGE</u>	<u>DEVIATION FROM AVERAGE</u>
North Coast	864	692	+ 25%	20,922	46,840	-55%
Sierra-Cascade	637	682	- 7%	9,800	30,729	-68%
Central-Sierra	762	636	+ 20%	23,548	19,880	+ 18%
San Joaquin	278	227	+ 22%	19,005	14,369	+ 32%
Central Coast	797	472	+ 69%	23,592	19,714	+ 20%
So. California	1,049	526	+ 99%	24,866	24,661	+ 1%
STATEWIDE	4,387	3,234	+ 36%	121,733	156,193	-22%

FOREST FIRE STATISTICS
CALIFORNIA DIVISION OF FORESTRY
DIRECT PROTECTION AREA
ZONES I AND II

INCIDENCE BY SIZE CLASS DURING 1968

<u>DISTRICT</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>	<u>G</u>	<u>TOTAL</u>
I	458	313	74	6	7	6	-	864
II	315	260	47	9	4	2	-	637
III	342	331	65	16	4	3	1	762
IV	108	117	34	10	6	2	1	278
V	355	309	87	24	21	1	-	797
VI	510	433	80	12	6	8	-	1,049
STATEWIDE	2,088	1,763	387	77	48	22	2	4,387

ACREAGE BURNED BY SIZE CLASS DURING 1968

<u>DISTRICT</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>	<u>G</u>	<u>TOTAL</u>
I	18	720	2,250	935	4,235	12,764	-	20,922
II	11	726	1,613	1,736	2,482	3,232	-	9,800
III	20	684	2,266	2,904	1,714	5,360	10,600	23,548
IV	6	334	1,445	1,641	2,954	4,810	7,815	19,005
V	8	841	3,166	4,514	12,541	2,522	-	23,592
VI	21	1,026	2,768	1,933	2,992	16,126	-	24,866
STATEWIDE	84	4,331	13,508	13,663	26,918	44,814	18,415	121,733

Class A - .25 Acre or less
Class B - .26 Acre through 10 Acres
Class C - 10.1 Acres through 100 Acres
Class D - 100.1 Acres through 300 Acres
Class E - 300.1 Acres through 1000 Acres
Class F - 1000.1 Acres through 5000 Acres
Class G - More than 5,000 Acres

FOREST FIRE STATISTICS
CALIFORNIA DIVISION OF FORESTRY
DIRECT PROTECTION AREA
ZONES I AND II

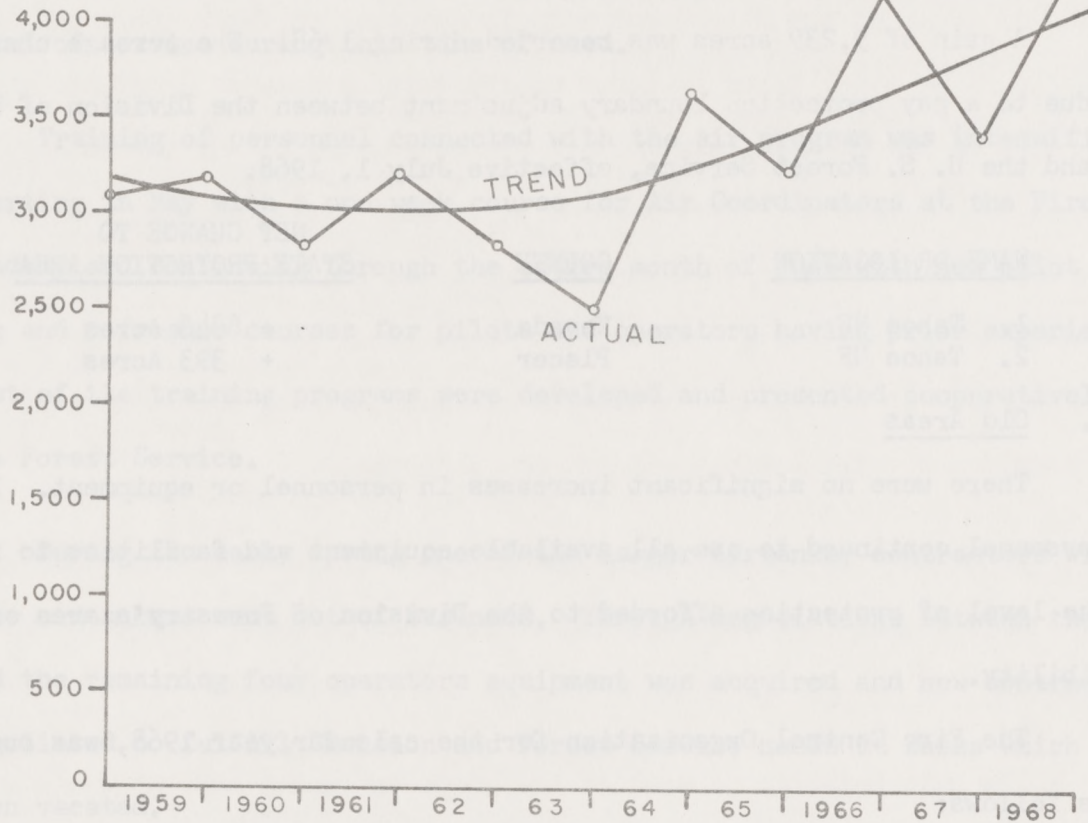
INCIDENCE BY CAUSE DURING 1968

<u>DISTRICT</u>	<u>LIGHTNING</u>	<u>CAMP FIRE</u>	<u>SMOKING</u>	<u>DEBRIS BURNING</u>	<u>INCENDIARY</u>	<u>MACHINE USE</u>	<u>MISC.</u>	<u>TOTAL</u>
I	192	23	99	80	147	127	196	864
II	130	23	78	80	99	92	135	637
III	20	28	114	80	144	139	237	762
IV	31	6	35	32	84	30	60	278
V	5	21	128	79	149	170	245	797
VI	36	21	164	100	165	150	413	1,049
STATE- WIDE	414	122	618	451	788	708	1,286	4,387

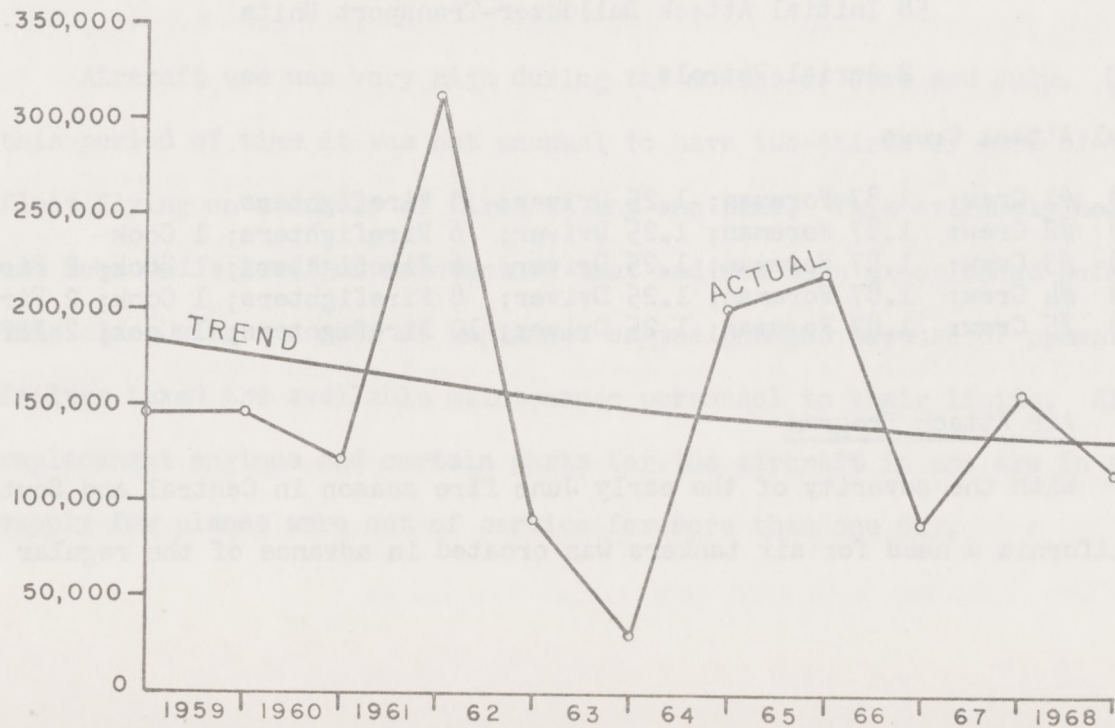
ACRES BURNED BY CAUSE DURING 1968

<u>DISTRICT</u>	<u>LIGHTNING</u>	<u>CAMP FIRE</u>	<u>SMOKING</u>	<u>DEBRIS BURNING</u>	<u>INCENDIARY</u>	<u>MACHINE USE</u>	<u>MISC.</u>	<u>TOTAL</u>
I	1,536	178	2,964	3,319	2,918	6,073	3,934	20,922
II	1,589	60	2,473	2,162	842	1,143	1,531	9,800
III	48	282	1,145	1,284	15,671	2,785	2,333	23,548
IV	300	28	814	350	8,919	2,523	6,071	19,005
V	30	368	1,327	1,068	2,950	11,065	6,784	23,592
VI	39	440	3,638	581	7,920	5,799	6,449	24,866
STATE- WIDE	3,542	1,356	12,361	8,764	39,220	29,388	27,102	121,733

NUMBER OF FOREST FIRES ZONES I & II



ACRES BURNED ZONES I & II



2. PROGRESS IN EXTENDING PROTECTION TO NEW AREAS AND ESTABLISHMENT OF BETTER PROTECTION ON OLD AREAS.

A. New Areas

A gain of 9,239 acres was recorded during 1968. The acreage change was due to a pay protection boundary adjustment between the Division of Forestry and the U. S. Forest Service, effective July 1, 1968.

<u>NAME OR LOCATION</u>	<u>COUNTY</u>	<u>NET CHANGE TO STATE PROTECTION AREA</u>
1. Tahoe NF	Nevada	+ 8846 Acres
2. Tahoe NF	Placer	+ 393 Acres

B. Old Areas

There were no significant increases in personnel or equipment. Existing personnel continued to use all available equipment and facilities to raise the level of protection afforded to the Division of Forestry's area of responsibility.

The Fire Control Organization for the calendar year 1968, was budgeted as follows:

235 Initial Attack Crews *
 45-#1, 59-#2, 55-#3, 44-#4, 32-#5
 77 Activated Lookouts
 58 Initial Attack Bulldozer-Transport Units
 2 Aerial Patrols

* Initial Attack Crews

(a) #1 Crew: 1.87 Foreman; 1.25 Driver; 3 Firefighters
 (b) #2 Crew: 1.87 Foreman; 1.25 Driver; 6 Firefighters; 1 Cook
 (c) #3 Crew: 1.87 Foreman; 1.25 Driver; 6 Firefighters; 1 Cook; 2 Firetrucks
 (d) #4 Crew: 1.87 Foreman; 1.25 Driver; 8 Firefighters; 1 Cook; 2 Firetrucks
 (e) #5 Crew: 1.87 Foreman; 1.25 Driver; 10 Firefighters; 1 Cook; 2 Firetrucks

C. Air Attack Program

With the severity of the early June fire season in Central and Southern California a need for air tankers was created in advance of the regular

contract period and prior to the annual CDF - USFS pre-season aircraft inspection. Through close cooperation of the operators and the agencies inspections were completed and aircraft placed in service at almost the full level of service during this time of need.

Training of personnel connected with the air program was intensified, starting in May with a one week course for Air Coordinators at the Fire Academy and continuing through the entire month of June with new pilot training and refresher courses for pilots and operators having prior experience. Most of the training programs were developed and presented cooperatively with the Forest Service.

During the early spring one of the larger airtanker contractors with nine airtankers went out of business. Through negotiations between the agencies and the remaining four operators equipment was acquired and new contracts negotiated to fulfill Division and Forest Service needs at bases which had been vacated.

The cooperative airtanker program remained at the same level as 1967 with the Division contracting for 21 airtankers and the Forest Service for 16 which were distributed among the 20 airtanker bases in California.

Aircraft use was very high during the months of June and July. During this period of time it was not unusual to have two-thirds or more of the fleet flying on a number of fires at any one time. This extremely heavy use demanded a level of maintenance that had not been experienced before. This along with a number of unplanned engine changes because of premature failure taxed the available maintenance personnel to their limits. Although replacement engines and certain parts for the aircraft in use are in short supply few planes were out of service for more than one day.

Six in-flight mechanical malfunctions occurred during this period requiring emergency landings. Three of these occurred during the take-off or landing phase of the flight and were landed back on the airport with little damage. The other three failures necessitated making an immediate emergency landing on the closest terrain that presented itself. Of these only one aircraft was damaged and there were no injuries. Two additional emergencies occurred prior to lift off. One of these was successfully handled with no damage to the aircraft, however, the other resulted in total loss of the aircraft as it overran the available remaining runway and hit a bank. Fortunately the pilot escaped without any injuries.

There were two instances of airtankers hitting trees while making their drop run. Neither of these incidents resulted in major damage to the aircraft.

The circumstances of each of the above accidents and incidents were investigated and personnel suspensions invoked for the pilot if there was any indication of pilot error.

The airtanker base improvement program started several years ago was almost completed during the spring period. The remaining work will be completed this coming winter.

Preliminary work was initiated to develop an airtanker base at the Chico Municipal Airport to replace the Red Bluff and Oroville airbases. A lease has been negotiated and building will be accomplished during the spring period so the base can be occupied at the start of the 1969 fire season.

The Division made direct air attack on 806 fires during the season flying a total of 6,239 hours for Fire Control. A total of 3,982,811 gallons of fire retardant were used during the fire season.

D. Research and Development

The Division continued to cooperate with many other government and private agencies in conducting fire research studies. Funds were contracted to the U.S. Forest Service, Pacific Southwest Forest and Range Experiment Station, for projects related to fireclimate, fire management systems, and fuelbreaks. Money was also contracted to the University of California School of Forestry for a special study in the economics of fire protection. In addition, Division personnel conducted several applied research studies of their own and also developed or evaluated several kinds of equipment designed to assist fire control personnel.

The Fireclimate Project completed reports on Santana wind flow in the San Bernardino-Riverside area and on the numerical analysis of the convection associated with a valley wind regime. Attempts to find meteorological factors which can be correlated with and used to predict air stability have been unsuccessful; this important study continues.

The Fire Management Systems Project has been defining the components of the fire management system, determining how economics and operations research methods can improve fire control operations, and developing techniques and methods for implementing the various components of the fire management system. One sub-system was designed to assist dispatchers in selecting and sending initial attack units to fires, planning move-up and back-up operations, and providing an inventory of all fire control units and their locations at any stage of the fire control operation. This system was tested at the Division of Forestry's San Bernardino Ranger Unit Headquarters during a part of the 1968 fire season. The dispatcher had access to a remotely located computer which enabled him to secure desired information in a matter of seconds. Although this prototype system was proved feasible and valuable, refinements will be necessary to make it completely work-

able. Other similar sub-systems for making fire control decisions have been developed to a large extent and will be ready for field testing soon.

A new fire retardant developed by Collier Chemical Company of Los Angeles was given operational testing on forest fires from Chino Air Tanker Base. A number of difficulties with the complex mixing system were encountered which made it impossible to complete a full evaluation of the retardant. Further testing will take place in 1969. The Division of Forestry participated in an inter-agency cooperative effort to determine the optimum viscosity of a retardant for use in helitankers. The tests were sponsored by Monsanto Company. It was determined that viscosities as low as 100 cps. and as high as 1500 cps. were useable in helitankers with the right combination of drop height and speed.

The Fuelbreak Project continued the study of various herbicides for the purpose of controlling regrowth of unwanted shrubby plants and trees on fuelbreaks, with the Division's Range Improvement Specialists establishing additional study plots throughout the state. Tordon showed considerable progress in helping to control some plants, such as live oak and sumac, which have been difficult to kill with previously used 2,4-D and 2,4,5-T. The search continued for low-growing plants with low fuel volume and, hopefully, low flammability. As a part of this search, the Division conducted a phenological and ecological study of Creeping Sage in Lake and Nevada Counties. This plant is a leading candidate for establishment on fuelbreaks.

The Economics of Fire Protection Project at the University of California continued to develop mathematical models of air tanker systems, taking into consideration actual fire occurrence and the relative efficiency of different air tanker types as determined by a survey of fire control personnel.

To supplement other kinds of tools used to gather fire intelligence,

the Division obtained a portable closed-circuit television system in 1968. Video tapes have a capacity of 20 minutes of continuous operation, but experience on fires late in 1968 showed that these tapes may last for two hours or more of flying time in normal operations. The tape is then returned to the Fire Camp where the Fire Boss and his staff can view the tape on a playback system. Further evaluation of the television equipment will be made in 1969. In the interim the equipment is being used at the Division's Fire Academy at Ione to assist in training personnel in field exercises. To further assist in its training programs at the Fire Academy, the Division purchased a training simulator developed by the U.S. Forest Service.

Two brands of light weight plastic-coated or rubber-coated nylon loading hose were tested for loading fire retardants into air tankers. Mixed reactions from personnel using the hose at four air tanker bases produced inconclusive results. Light weight, low cost, $1\frac{1}{2}$ " polycarbonate nozzles were found to have many desirable features in comparison to the traditional brass nozzles. The principal shortcoming was found to be difficulty in adjusting the spray pattern while the water was under high pressure. One inch nozzles of this same material were purchased late in 1968 for evaluation. During 1968, the Division developed a trailer-mount generator plant for field testing in 1969. The generator is designed to meet the electrical needs of an entire fire camp setup.

E. Fire Weather

1. Fire Danger Rating

Cooperative use of the California Wildland Fire Danger Rating System by the Division continued in 1968. In District III a special application of the System was carried out. This amounted to an evaluation of the effectiveness of frequent sampling of fire danger at selected spots throughout the working day.

The Division continued to investigate the field of remote telemetering of fire weather data, both by evaluation of the Division's one prototype automatic weather station and by some climatic investigation.

2. Fire Weather Service

There were no additions to the fire weather program of the Weather Bureau within the state during the year.

During the fire season, the Division made use of the mobile fire weather units 21 times for a total of 59 days.

3. IMPORTANT CHANGES IN PROTECTION PLAN, ADDITION OF PERMANENT PERSONNEL, ETC.

A. Fire Plan Revision

The risk analysis portion of the fire plan was updated to include the period 1964 - 1968 for all ranger units and the contract counties. The risk analysis gives a measure of the exposure to risk which Division Administrative Units can use when planning fire protection needs.

During 1967, nine facilities of the Camp Program were phased out during the first six months of the **calendar** year. Yet, despite this decrease in manpower, the total man-days produced by the inmates and wards in 1968, was only 918 man-days less than the 1967 total. The man-days devoted to fire suppression increased from 7.58% (63,673 man-days) in 1967, to 11.06% (92,864 man-days) for 1968.

Distribution of man-days worked by the inmates and wards which were assigned to the Conservation Camp Program in 1968 is as follows:

<u>Activity</u>	<u>Time Involved In Man-Days</u>	<u>Sub- Totals</u>	<u>Percent of Total</u>
1. Fire Suppression Mop-Up & Patrol:	92,864	92,864	11.06
2. Pre-Suppression and Facilities:			
Forest Fire Station Maintenance	36,127		
Maintenance of Remote Facilities	10,184		
Maintenance of Telephone Lines	5,681	51,992	6.21
3. Fire Defense Improvements:			
Fuelbreaks	134,789		
Hazard Reduction	62,637		
Truck Trails	28,477	225,903	26.91
4. Forest Range & Watershed Management:			
Forest Insect and Disease Control	3,515		
Nursery	6,785		
Seed Collecting and Processing	3,448		
Miscellaneous	26,674	40,422	4.81
5. In Camp Projects:	51,747	51,747	6.17
6. Camp Services:	152,630	152,630	18.18
7. Other Services:			
Building Equipment, Maintenance & Construction	54,951		
Training	14,042		
Department of Fish and Game	17,419		
Department of Parks and Recreation	52,730		
Department of Water Resources	842		
Other Agencies	4,516		
Search and Rescue	1,268		
Blood Donation	935		
Miscellaneous Projects	77,035	223,738	26.66
	TOTAL	839,296	100.00

B. The Conservation Camp Program

There were no additions or deletions of facilities in the Conservation Camp Program during 1968. The total number of camps in operation remains at 33, with 29 adult installations, and 4 which have wards from the Youth Authority.

The majority of the old buildings at the Ben Lomond Youth Conservation Camp, in District V, were replaced with modern new facilities during 1968. These were dedicated at ceremonies conducted on October 18, 1968. This newest camp is located on the Empire Grade Road in the Santa Cruz Ranger Unit.

Construction of the new buildings at the Pine Grove Youth Conservation Camp is progressing so that completion is expected early in 1969.

Population of Conservation Camps:

<u>Number of Camps</u>	<u>Camp Type</u>	<u>Population</u>
29	Adult Inmates	2,380
4	Youth Authority Wards	<u>300</u>
Ward and Inmate Total		2,680

Distribution of Conservation Camps and population by District:

<u>District</u>	<u>Number of Camps</u>	<u>Population</u>		
		<u>Wards</u>	<u>Inmates</u>	<u>Total</u>
(I) North Coast	7	-	580	580
(II) Sierra-Cascade	6	-	500	500
(III) Central Sierra	6	150	340	490
(IV) San Joaquin	4	80	240	320
(V) Central Coast	3	70	14	210
(VI) Southern California	7	-	580	580
Totals	33	300	2380	2680

C. Job Corps Conservation Center

The Division of Forestry continued to operate the Oak Glen Camp as a Job Corps Conservation Center during 1968, under the terms of an agreement between the State of California and the U. S. Office of Economic Opportunity. The camp has a capacity of 170 Job Corps enrollees. During the year, the Job Corps vocational training program was intensified, and one of the present program objectives is that each enrollee will undertake a definite, structured vocational program at the camp. The vocational program is closely coordinated with the conservation work done by the enrollees. The other main portions of the Job Corps program, such as education, counseling, recreation, and citizenship development, were stabilized during the year, with cost reduction and increased effectiveness as primary goals. During the fire season, Oak Glenn crews were heavily involved, and they accumulated almost 27,000 man hours of fire suppression time in the southern portion of the State.

D. Neighborhood Youth Corps

During 1968, the Division of Forestry continued cooperative operations with the U. S. Department of Labor Neighborhood Youth Corps. In this program, young men and women from low-income families receive on-the-job training and minimum wage scale payment. During the year, 40 positions were identified in various Forestry units and 60 youths participated in the program for varying lengths of time. The jobs included clerical, maintenance, kitchen, warehouse, and shop work. Forestry personnel provided on-the-job training and supervision, and the Department of Employment provided for the recruitment and payment of the enrollees. The experience and training that the enrollees received will help them become self-sustaining adults and the work they accomplished contributed to the overall output of the Division of Forestry.

E. Personnel Changes

The following personnel changes can be attributed to Administrative and Legislative action.

Administration:

Deletions

- 1 - Associate Equipment Engineer
- 1 - Civil Engineering Technician I
- 1 - Delineator
- 2 - Engineering Aid II
- 1 - Forest Truck Driver
- 1 - Storekeeper I
- 1 - Skilled Laborer
- 1 - Groundsman
- 1 - Stock Clerk
- 1 - Laborer

District Headquarters:

Deletions

- 3 - Carpenter
- 6 - Painter
- 1 - Forester I
- .5 - Groundsman

Field Services:

Deletions

- 1 - State Forest Ranger
- .5 - Intermediate Clerk

The Division's Fire Suppression strength for 1968-69 Fiscal Year compared to 1967-68 Fiscal Year is as follows:

	<u>Man Years 1967-68</u>	<u>Man Years 1968-69</u>	<u>Change</u>
Summer Suppression Crews:			
Forestry Foreman I	274.8	274.8	--
Forest Fire Truck Driver	210.4	206.5	-3.9
Forestry Equipment Operator	75.8	75.8	--
Forest Firefighter	524.2	524.2	--
Forestry Cook I	13.8	40.5	+26.7
Forestry Cook II	4.4	4.4	--
Forest Fire Lookout	58.8	58.8	--
Winter Work Crews:			
Forestry Foreman I	176.6	176.6	--
Forest Fire Truck Driver	101.0	101.0	--
Forestry Equipment Operator	52.1	52.1	--
Forestry Cook II	3.4	3.4	--
Forestry Cook I	8.4	8.4	--
TOTAL	<u>1503.7</u>	<u>1526.5</u>	<u>+22.8</u>

The number of Yearlong Employees by Civil Service Class are as follows:

<u>Class</u>	<u>1967-68</u>	<u>1968-69</u>
Forestry Foreman II	268	268
Forestry Foreman I		
Crew Foreman	441	441
Patrol Foreman	4	4

<u>Class</u>	<u>1967-68</u>	<u>1968-69</u>
Relief Dispatcher-Warehouseman	28	28
Relief Dispatcher-District	6	6
Forest Fire Truck Driver	297 (87 County Contract During Winter)	297 (87 County Contract During Winter)
Forestry Equipment Operator		
Initial Attack Bulldozer Operator	128	128
Assigned to Conservation Camps	33	33

For comparative purposes with other States, the Division of Forestry pay grades (Maximum after four years of service) are:

<u>Civil Service Title</u>	<u>Monthly Salary</u>
State Forester	\$ 1,882
Chief Deputy State Forester	1,708
Deputy State Forester	1,548
Assistant Deputy State Forester	1,405
State Forest Ranger III	1,337
State Forest Ranger II	1,213
State Forest Ranger I	1,048
Associate State Forest Ranger	998
Assistant State Forest Ranger	905
Meteorologist	1,213
Forester III	1,213
Forester II	1,048
Forester I	905
Law Enforcement Coordinator	1,405
Assistant Mechanical Engineer	998
Architectural Associate	1,155

<u>Civil Service Title</u>	<u>Monthly Salary</u>
Forestry Equipment Engineer	\$ 1,273
Forestry Superintendent Conservation Camp	998
Forestry Air Operation Engineer	1,273
Forestry Foreman I	821
Forestry Foreman II	905
Forestry Equipment Operator	821
Forestry Fire Truck Driver	710
Forestry Fireman	584
Forest Firefighter (Seasonal only)	480
Forest Fire Lookout (Seasonal only)	556
Forestry Cook I	628
Forestry Cook II	692
Forestry Field Trainee	746
Forestry Graduate Trainee	821
Fire Prevention Officer V	1,213
Fire Prevention Officer IV	1,048
Fire Prevention Officer III	998
Fire Prevention Officer II	905
Fire Prevention Officer I	821

4. FIRE EQUIPMENT AND IMPROVEMENTS:

A. Equipment

1. Inventory

During 1968 the Division had in operation the following equipment: (**)

<u>Transportation</u>		<u>Equipment</u>		<u>Construction and Maintenance Equipment</u>	
Sedans	171	Pumpers:		Maintainers (Graders)	33
Station Wagons		Firetrucks 4-W.D.	143	Dump Trucks	42
and Suburbans	55	Firetrucks Conv.	238	Cement Mixers	49
Panels	31	Pickup Pumpers	49	Compressor Trucks	2
Pickups	226	Bulldozers:		Compressor Trailers	43
Stakesides	110	Large	58	Front End Loaders	28
Jeeps	61	Medium	36	Miscellaneous	65
Buses	144	Transports:		Fork Lifts	26
		Large	38	Semi-Trailers	42
		Medium	37		
		B.D. Service Units	61	Ambulance	1
		Misc. Equipment:			
		Woodchippers	22		
		Hazard Red. Tractors	3		
		Discs	11		
		Small Tractors	4		
		W/Plow	1		
		House Trailers	20		
		Miscellaneous	89		
		Semi-Tank Trailers	39		
		Water Tank Trailers	4		
		(approx. 400 Gals.)			
		Various	47		

During 1969 (68/69 F.Y.) the following vehicles were received and placed in service.

Sedans	4
Pickups	32
Panels	2
Station Wagons	9
Firetrucks 4-W.D.	7
Firetrucks Conv.	22
Bulldozers, Large	1
Bulldozers, Medium	5
B.D. Service Units	2
Int'l Scouts	20
Stakesides	12
Transports, Medium	5

**Up to July 1, 1969 - end of present Fiscal Year.

B. Improvements

1. Structures

The lookout facility was replaced at Likely Mountain Lookout in Lassen County.

New Fire Control facilities were constructed to replace inadequate stations at the following locations:

White Star Forest Fire Station - San Diego County.

Red Mountain Forest Fire Station - San Diego County.

Copperopolis Forest Fire Station - Calaveras County.

At King City, Monterey Ranger Unit Headquarters, new barracks, messhall, and warehouse were constructed.

The camp facility at Ben Lomond Conservation Camp, Santa Cruz County, was replaced--also two residences were constructed.

Major revamping and new facilities were constructed at the following Air Tanker Bases:

Paso Robles Air Attack Base - San Luis Obispo County.

Hollister Air Attack Base - San Benito County.

Porterville Air Attack Base - Tulare County.

2. Water Development

a. 10,000 Gallon Cast-In-Place Concrete Water Storage Tanks

1 - Tehama County

1 - Siskiyou County

1 - Placer County

2 - Nevada County

3 - Riverside County

3 - San Diego County

3. Summary of C.D.F. Bridges (1/9/69)

District	Bridge Class											
	A		B		C		D		E		F	
	Suspension		Steel Beam		Timber Span		Concrete Slab		Log Span		Steel Truss	
	No.	Feet	No.	Feet	No.	Feet	No.	Feet	No.	Feet	No.	Feet
I	-	-	1	38	8	274	1	41	20	554	-	-
II	-	-	7	448	9	203	2	62	10	315	6	748
III	-	-	4	182	-	-	7	88	-	-	5	907
IV	-	-	-	-	1	14	-	-	-	-	-	-
V	-	-	-	-	1	60	-	-	-	-	1	70
VI	-	-	-	-	1	16	-	-	-	-	-	-
TOTALS	-	-	12	668	20	567	10	191	30	869	12	1,725

District II - Add 2 - 100' "E" bridge

4. Power Lines

DISTRICT	MILES
District I	10.1
District II	1.7
District III	0.6
District IV	0
District V	0
District VI	0
TOTAL	12.4

District I minus 2.3 from 1-1-68
 District II minus 0.3 from 1-1-68
 District IV minus 2.5 from 1-1-68

5. Telephone Lines (Mileage by Districts)

DISTRICT	GROUND	ADJUSTMENT	NEW TOTAL	METALLIC	ADJUSTMENT	NEW TOTAL
I				118.0	1.5	119.5
II	54.2	-6.7	47.5	457.2	-50.8	406.4
III				207.5	- 1.4	206.1
IV				153.4	- 8.2	145.2
V				142.5	- 0.5	142.0
VI				4.5	-0-	4.5
	54.2	-6.7	47.5	1,083.1	-59.4	1,023.7
						47.5
					TOTAL	1,071.2

6. Maps and Drafting

a. New Maps

1. Modoc County (Lassen-Modoc Ranger Unit)
2. Mountain Home State Forest

b. Miscellaneous

Court case exhibits, fire prevention roadside signs, training certificates, handbooks, forms, booklets, training aids, a headstart fire prevention folder.

Del Norte County Map is awaiting final field check and will then be ready for printing. Approximately 500 administrative maps were sold during 1968.

7. Material Printed

A total of 6,1000 Ranger Unit Maps and 4,600,000 prints of Fire Prevention Education material were printed.

8. C.D.F. Road Mileage

<u>DISTRICT</u>	<u>1-1-68</u>	<u>1-1-69</u>	<u>CHANGE DURING 1968</u>
I	353.2	385.8	Add 32.6 miles
II	1,289.3	1,314.3	Add 25.0 miles
III	480.7	492.5	Add 11.8 miles
IV	555.9	577.3	Add 21.4 miles
V	497.5	508.9	Add 11.4 miles
VI	600.6	613.1	Add 12.5 miles
<hr/>			
	3,777.2 miles	3,891.9 miles	Add 114.7 miles
			ALL DISTRICTS

9. Fire Defense Improvements

a. Fire Breaks

DISTRICT	Miles Existing				Miles Under Construction	
	F	F1	F2	F3	F	F1
I	-	-	-	-	-	10.5
II	42.2	-	-	-	-	-
III	-	34.8	4.8	0.5	-	-
IV	43.3	71.9	-	-	-	28.5
V	12.3	14.9	-	-	3.9	14.3
VI	24.3	21.0	-	-	-	-
TOTAL	121.9	142.6	4.80	0.5	3.9	52.8

b. Fuelbreaks

DISTRICT	Miles Existing				Miles Under Construction			
	FB	FB1	FB2	FB3	FB	FB1	FB2	FB3
I	31.0	47.6	50.7	-	-	3.0	81.6	-
II	5.0	61.5	124.6	54.0	-	5.5	50.2	28.0
III	47.9	153.3	152.3	128.4	-	8.2	103.7	48.4
IV	85.0	23.0	7.2	52.4	10.0	19.1	2.4	86.8
V	50.5	7.0	150.9	53.0	1.0	-	4.0	6.0
VI	55.8	67.3	68.7	167.3	-	4.8	5.8	25.8
TOTAL	275.2	359.7	554.4	455.1	11.0	40.6	247.7	195.0

c. Trails and Water Facilities

District	Trails				Water Facilities		
	Miles Existing		Miles Funded		Existing Number of Tanks		Number Funded
	Foot	Jeep	Foot	Jeep	10,000 Gal. or more	Less than 10,000 Gal.	
I	7.5	30.5	-	-	27	18	1
II	12.2	18.5	-	-	23	21	7
III	13.0	.6	-	-	22	14	7
IV	20.5	-	-	-	16	18	2
V	-	-	-	-	16	3	4
VI	-	-	-	-	106	-	24
TOTAL	53.2	49.6	-	-	210	74	45

d. Airport Facilities and Safety Islands

District	Number of Aircraft Landing Facilities						Safety Islands			
	Existing			Funded or Under Const.			Existing		Under construction	
	Fixed Wing	Heli-ports	Heli-spots	Heliports	Helispots		No.	Acres	No.	Acres
I	3	4	13	-	-	-	-	-	-	-
II	3	3	22	1	-	16	142.0	22	220	
III	3	4	36	-	1	42	377.2	9	-	
IV	3	23	36	-	-	1	5.0	41	630	
V	2	2	12	-	3	-	-	10	50	
VI	2	2	21	-	-	26	136.0	125	408	
TOTAL	16	38	140	1	4	85	532.4	207	1,308	

10. Land Transactions

a. Site Acquisitions

Six parcels of land were acquired for use by the Division of Forestry during 1968:

1. Bradley FFS (20 foot right of way acquisition addition)
2. Coulterville Forest Fire Station (3.95 acres)
3. Nevada City Ranger Unit Headquarters (.16 acre addition)
4. Robinson Mills Forest Fire Station Site (to replace old site - Hurleton Forest Fire Station) 9.1 acres
5. Soquel Forest Fire Station (2.62 acres)
6. Wentz Estate (a bequest to Forestry consisting of 2,261.49 acres)

Two hundred and sixty-six agreements were processed to completion during 1968.

Agreements were a combination of recordable easements, non-recordable easements and various permit forms from Federal Agencies.

0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 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Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' Landing		0.02 Meters of 2500' 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11. Radio

In early 1968, the Division began the purchase of new radio equipment and units were ordered to accomplish the following:

1. Complete the microwave systems in Districts III, IV, and V, in order that all ranger units in these Districts may have the air net-intercom system and the green phone system to aid fire dispatching.
2. Three air net remote controlled base stations were purchased to complete the air net system in District II.
3. Three replacement mobile relays were purchased, and five additional mobile relays to expand State net coverage were purchased.
4. Four airport base stations on CDF frequencies and seven airport base stations on the Unicom frequency, 122.9 MHz, were purchased. This completes the purchase of radios for all air tanker bases.

Above are the major categories of equipment purchased. A few miscellaneous items, such as small replacement fire station radios, etc., were also ordered. All of the equipment ordered is planned for installation prior to the 1969 fire season.

The major communications activity for 1968 centered around the planning of a major change in the Division of Forestry's radio communications system to satisfy existing and future fire control operations for the next five to ten years. The communications system change is funded to start during the 1968-69 fiscal year, will span a 5-year period, and will cost \$500,000 to \$600,000 per year. Approximately half the cost will be borne by replacement funds which are necessary to replace existing obsolete equipment. At this writing the Division of Forestry has about 3,000 pieces of VHW communications equipment of which about 1,600 pieces are over the age of ten years. The radio system changes planned for the Division of Forestry are briefly as follows:

1. Add radio coverage to the existing State net radio system and change the State net system from a 3-tone to a 5-tone mobile relay actuate system.
2. At the present time, the District radio net mobile relays are actuated by two radio frequencies per District. The District radio nets will be changed to a 5-tone single frequency actuate system, thus freeing radio frequencies for other uses.
3. Local radio nets will be assigned to individual ranger units to the extent that frequencies are available. Some adjacent ranger units will have to share a local net frequency.
4. Change the air net system from a single frequency system to a 3-frequency system and purchase all new radio equipment for aerial tankers and "Airco" aircraft.
5. Establish a separate frequency for Handie Talkie radios. This will eliminate interference to Handie Talkie communications emanating from high-powered mountaintop mobile relays. It also provides a common statewide frequency for use by fire control forces on foot along the fire line perimeter.

Included in the plan is the investigation of the possibility of purchasing small inexpensive "Citizen '2 Band" type hand-held radio equipment for use in large scale fire control operations.

5. FIRE PREVENTION ACTIVITIES

In 1968 fires occurred on Division protection areas at a rate of approximately 22 per 100,000 population. Although it would appear from these figures that the program was not materially successful in 1968, consideration must be given to the fact that the ever-expanding population in California continues to complicate the total fire prevention effort.

The 1968 forest fire statistics for the BuCo Project* in Butte Ranger Unit proved that fires can be prevented when critically needed positions are filled to carry out the total prevention program. While statewide forest fire occurrences on state responsibility areas were well over 900 fire starts above the normal five-year average, Butte showed a marked decrease on the average.

Fire Prevention handbooks are being prepared for field use and were due to be issued by mid-year 1968. Because of the tremendous workload in other areas, this was not possible. However, portions of two handbooks should be ready for field use by April or May, 1969. Other portions of these handbooks should follow shortly thereafter.

The Division's Fire Prevention program emphasized co-operation with other agencies to secure the best possible results. Fire prevention efforts were coordinated with organizations such as Keep California Green, Inc., the Redwood Region Conservation Council, the California Federation of Womens Clubs, the California Chamber of Commerce, the Pacific Telephone Company, and the Southern California Edison Company. A very close working relationship with the U.S. Forest Service took advantage of pooling efforts in fire prevention and conservation education.

*BuCo Project - In 1967 Butte Ranger Unit was chosen as the area for a pilot fire prevention program. This program was the implementation of full planned fire prevention manpower.

The Southern California Edison Company and the Pacific Telephone Company hosted the 1968 California Fire Prevention Committee meeting in Los Angeles and San Francisco. The general topic of discussion at the meetings centered around new methods of achieving a better fire prevention program by committee members, representing organizations and companies and, in some instances, individual effort.

Considerable effort was made to recruit additional citizen groups and individuals to help further forest fire prevention in their particular areas of endeavor. The California Division of Forestry's Fire Prevention Research Committee met on two occasions to discuss fire prevention research and make recommendations in the area of fire prevention where research was felt necessary.

A. Information and Education

The annual California Fire Prevention Committee awards were presented by the California Division of Forestry to Joe DeLucchi of DeLucchi Farms, and Keep California Green, Inc. for their outstanding public service work in forest fire prevention. The meetings of this Committee were held in late May.

This organization again distributed a vast amount of fire prevention material through their normal channels and outlets. The Pacific Telephone Company, a member of this committee, and past award winner, displayed fire prevention posters on the side of their telephone service trucks for a two-months period during fire season. Telephone booths scattered throughout the state also carried an appropriate fire prevention message. This committee and Division employees distributed in excess of 6-1/2 million pieces of fire prevention literature during 1968.

The Division distributed special TV spots produced from color film showing disastrous 1967 fires. These spots were well accepted and shown on TV stations

throughout the state.

An eight-minute Sniff and Snuff feature color animation was taped. This video tape was shown as a Federation of Farm Bureau summer TV series throughout the state.

The Division initiated a motion picture filming program in an effort to obtain front-line motion picture shots for eventual use in fire prevention TV spots and training films. Training in the care and use of movie equipment was provided by George Fox of Public Service Films to selected Fire Prevention Officers in each District. The Division contracted with the Department of Water Resources to store and catalog the camera originals. Division personnel will edit film to be used.

Work began on updating the Division's training film, "Campaign Fire."

Sniff and Snuff, the animated fire prevention characters developed a few years ago by Public Service Films in cooperation with the Division of Forestry, were again shown on television. Twenty-, thirty-, and sixty-second announcements of Sniff and Snuff giving three different fire prevention messages, were also accepted very well by the television public service directors.

The California Federation of Womens Clubs once again did an outstanding job in selling forest fire prevention throughout the State. They set aside one week in May in observation of Forest Fire Prevention, at which time the State Conservation Chairman encouraged all local clubs throughout the State to present fire prevention programs and pass out literature on forest fire prevention. The women's club concentrated on school children in the grades kindergarten through sixth.

The Division of Forestry initiated a fire prevention award for this spirited

group. Last year an attractive plaque was presented to the California Federation of Womens Clubs at their State meeting in Bakersfield. This award will be presented annually to the organization or individual that does the most in forest fire prevention with children in kindergarten through the sixth-grade level.

The Division initiated and issued a new publication entitled "California Fire Prevention Note." This publication will be issued periodically to keep the field informed of new and successful approaches in reducing the incidence of forest fires.

The Division of Forestry cooperated with the Office of Economic Opportunity to develop a teacher's kit for teaching pre-school children. A cooperative research project has been established in Riverside County to determine the effect this pre-school fire prevention program has on young children. New and simplified material was developed specifically for this project. If this material proves to be effective, it will be printed in larger quantities for eventual use by field personnel with pre-school and early elementary school children.

A presentation was made to the California State Board of Forestry on the children and matches problem in California.

A program relating new methods used in fire prevention with pre-school and early elementary school children was presented to the California-Nevada Fire Research Committee at their annual meeting in Sacramento.

Motion picture film in the Division's film library was updated with the addition of new and modern conservation and fire prevention education motion pictures and replacement of those that were no longer worth showing.

Cooperation with others was again the key to a successful Information and Education program in 1968. Citizens groups, organizations, and other governmental agencies worked closely with the Division and attained remarkable results.

B. Fire Prevention Engineering

A committee was established early in the year to complete the handbook on Fire Prevention Engineering. The handbook is scheduled for field distribution about April, 1969. Primary emphasis on this handbook is in providing useful information and instructions in the hands of the personnel conducting fire prevention work on a day-to-day basis with the public.

The largest electric utility in the State, Pacific Gas and Electric Company, was urged to develop a liquid fuse to replace the open link used in wildland areas. The final tests have been completed on the liquid fuse and it looks very promising in eliminating fires caused from open link fuses.

Another committee comprised of representatives from all the major private, municipal, and district electric utility organizations also was organized to review the State Forester's regulations on hazard reduction measures necessary on powerlines and facilities. The committee is currently running tests on certain electrical hardware and will have some recommendations for regulation changes prior to the 1969 Fire Season.

The State Forester's office was represented on the State Fire Marshal's Explosives Advisory Board. Due to new state statutes, the entire field of explosives is now more stringently controlled by the State's fire agencies. The Board assisted the State Fire Marshal in establishing regulations for handling, transporting, using, and storing explosives.

Recognizing that railroad fires have become an increasing problem, a cooperative program testing railroad locomotive spark arresters was initiated by

the Division. Testing will be done on regularly scheduled trains using a testing device designed and constructed by Division personnel. One such test has been completed on the Southern Pacific Railroad on an SD-9 model locomotive. Testing will continue in 1969 and, after evaluation, changes in spark arresters may be necessary for some railroads. While testing arresters, operating procedures by the railroads are being noted and will be studied for possible changes to **reduce** fires on rights of way.

6. LAW ENFORCEMENT

Criminal prosecutions for fire law violations increased in 1968, 422 arrests were made for misdemeanor violations, which resulted in 330 convictions and 50 formal actions against juveniles via the Juvenile Court system. Division employees initiated criminal cases against 28 adults for felony fire law violations. Six felony convictions were obtained while many other adult cases resulted in pleas of guilty to lesser charges, commitments to mental institutions, return of violators to the military authorities for prosecution, or prosecution for other crimes committed concurrently with arson. Sixteen cases against juveniles were initiated and concluded which would have been felonies if the violators had been adults.

Recovery of fire suppression cost pursuant to Section 13009 of the Health and Safety Code resulted in settlement of 670 cases and recovery of \$120,000. Negotiated settlements were concluded with several major utility and railroad companies in the amount of approximately \$80,000, which was not received during 1968. Preliminary examination of reports received by December 15, 1968 indicates a potential of recovering \$172,000 from 1968 fires.

In-service training for Division peace officers continued at the Fire Academy. One hundred seventy-seven officers received training, of which 22 completed 160 hours instruction, and 82 officers completed the first 80 hours

of instruction. Course LE-7 provided 40 hours of enforcement training for Forest Practice Inspectors. This is the first time this training has been provided. Instruction in enforcement was continued for administrative personnel and members of the Arson Investigation Unit.

Enforcement of the Forest Practice Act was further intensified during 1968 and resulted in several cases which were important in establishing future enforcement procedures. Staff recommendations were submitted to the Board of Forestry for the strengthening of administrative regulations pertaining to the conversion of timberlands to uses other than the growing of timber as provided by Section 4577, Public Resources Code. The Board subsequently repealed the old regulations and adopted new regulations intended to curtail intentional circumvention of the basic provisions of the Forest Practice Act and, still, provide for legitimate conversion of timberland to alternate uses.

7. FIRE PREVENTION RESEARCH

Research continued during 1968 with the emphasis placed on child-caused fires. Answers to some fire prevention problems are beginning to help the Division carry out the Fire Prevention program more effectively. The need for research has never been more apparent than it is today to enable the Division to get the most effective results in their total Fire Prevention program.

Fire Hazard Inspection -- An additional year's experience with fire hazard inspections verified the major findings of the previous year. An evaluation of the results of the two-years' efforts showed 49 percent of the properties in violation in the spring of 1967 in contrast to 63 percent the previous year. Most of the improvement was in the reduction in the number of incinerator violations and in the number of failures to have a burning permit. In many cases personal contact was still found to be necessary to secure conformance in spite of the previous year's exposure to the program.

Child-Caused Fires -- Problems in getting a suitable population of "fire problem children" delayed the work of this study being conducted by George Washington University under contract with the Division. This is a basic research study designed to probe the factors responsible for producing children who become problem fire setters. It is expected that this will also cast some light on the cause of adult pyromania, as well as the more "normal" behavior of children who are involved in accidental fire starts. The study group has prepared a supplement to the Fire Investigation Report, LE-13, which has the potential of making this report more meaningful in providing data on child-caused fires.

A more applied approach was used in a study conducted by educators at Chico State College. They developed and tested conservation education materials for each grade, kindergarten through third. The materials were used in an experimental situation in the public schools in Butte County. Control groups continuing the traditional approach provided comparable data. Data collection was completed at the end of the school year. Analysis is well underway. Preliminary analysis indicated that changes in knowledge level as a result of the new approach were considerable.

Fire Prevention in CDF -- The study of fire prevention personnel and practices in the Division of Forestry undertaken by the University of California, under contract with the Division, has resulted in a report by Adam Sarapata for the Division's internal use. Divergencies of understanding within the organization vis-a-vis its goals in fire prevention (and other areas of concern), in the importance of these goals, and in the means of implementing them, were found to exist between different levels of the organizational hierarchy and between different job categories. Perception of Division priorities revealed

that fire prevention is held to be less important than fire suppression and fire detection, but more important than land management advising and consulting. It had about the same importance as a number of other Division activities--for example, nursery and reforestation, State Forest management, and public relations.

BUCO -- This project is currently at the input stage. Coordinated education and enforcement programs are being conducted by an augmented prevention staff. A resurvey will be made in 1969 or 1970 to determine the effect of these activities on the public.

This research is supported cooperatively by the California Division of Forestry, California Department of Conservation; Pacific Southwest Forest and Range Experiment Station; and Region 5, U.S. Forest Service. During the past year the University of California, Berkeley, George Washington University, Brigham Young University, and Chico State College have assisted with certain phases of the research under cooperative agreements with the Station or under contracts with the Division.

Small chemical extinguishers weighing approximately one pound, were tested to establish standards for their use with portable power tools. The new standards will be adjusted as administrative regulations of the State Forester to become effective prior to the opening of the 1969 Fire Season.

8. LEGISLATION

A number of statutory changes were enacted by the State Legislature which affects the Division's prevention and enforcement work. Legislative changes may be highlighted as follows:

1. Senate Bill 1178 broadly amended all peace officer powers in the State and specifically amended Section 4156 of the Public

Resources Code to include forest laws and regulations within enforcement authority of Division peace officers.

2. Section 4444 of the Public Resources Code, which required the State Forester to issue written permits for the use of tracer ammunition, was repealed. Tracer ammunition is now classified as a "destructive device" in Section 12301 of the Penal Code and controlled as such with other materials similarly classified.
3. Section 4427, Public Resources Code, was amended to specify the type of fire tools required in connection with certain high fire risk activities in wildland areas.
4. The State Forester was authorized to specify type and size of fire extinguisher which must be used when operating portable power tools (Sec. 4431, Pub. Res. Code).
5. Section 13004 of the Health and Safety Code was updated to reflect our changing technology by reducing the number of fire extinguishers required on harvesting equipment. Companion legislation to require an extinguisher on all motor vehicles used in harvesting operations failed to pass.
6. Sections 4438 and 4446 of the Public Resources Code were amended to clearly require written permits for the use of saw-mill burners and other enclosed incinerators.
7. Increased public recreation on the State Forests and the need to regulate public activities on the forests was recognized. Section 4645, Public Resources Code, now authorizes the State Board of Forestry to adopt administrative regulations for such purpose.

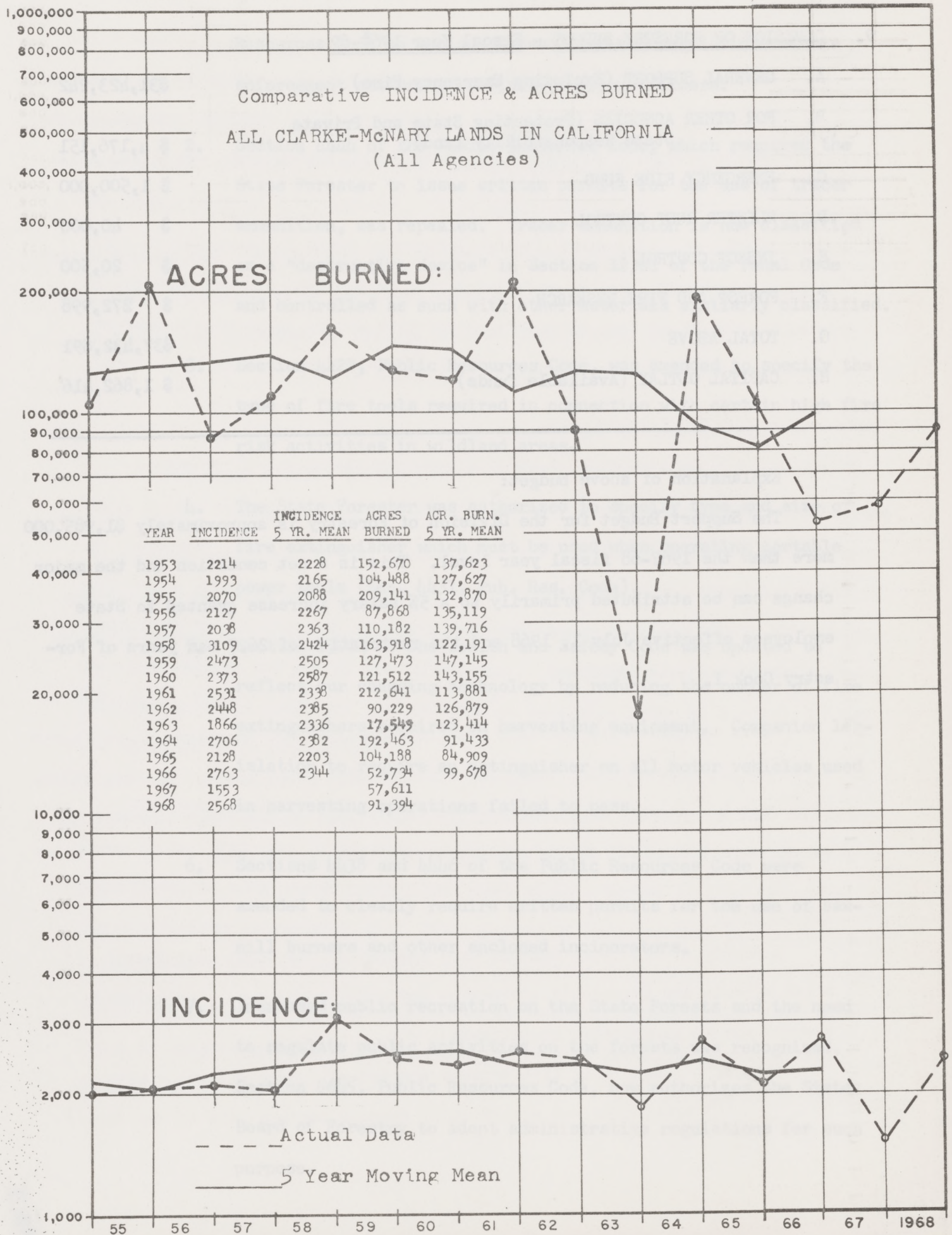
9. DIVISION OF FORESTRY BUDGET - Fiscal Year 1968-69

A. GENERAL SUPPORT (Excluding Emergency Fire)	\$31,423,242
B. FOR OTHER AGENCIES (Protecting State and Private State Responsibility Land)	\$ 4,176,151
C. EMERGENCY FIRE FUND	\$ 1,500,000
D. BLISTER RUST CONTROL	\$ 40,000
E. INSECT CONTROL	\$ 20,500
F. FOREST AND FIRE RESEARCH	\$ 272,998
G. TOTAL ABOVE	\$37,432,891
H. CAPITAL OUTLAY (Available funds)	\$ 1,862,416

Explanation of above budget:

The Support Budget for the Division of Forestry is approximately \$1,985,000 more than the 1967-68 fiscal year level. This is a net condition and the major change can be attributed primarily to a 5% salary increase granted to State employees effective July 1, 1968 and the restoration of 26.7 man years of Forestry Cook I.

PROGRESS MADE IN MEETING FIRE PROTECTION STANDARDS AND OBJECTIVES



11. COOPERATIVE AGREEMENTS FOR PROTECTION OF STATE AND PRIVATE LANDS

A. Clarke-McNary Land Protection

The State Forester contracts, by cooperative agreements, for protection of Clarke-McNary lands with the Forest Service, and the five contract counties of Marin, Kern, Santa Barbara, Los Angeles and Ventura as follows:

C-M Lands protected by the Division	13,248,487
C-M Lands protected by the Forest Service	5,129,606
C-M Lands protected by the Contract Counties	1,503,954

Total	19,882,047
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B. Federal Lands Protected by the State

<u>Agency</u>	<u>Acres</u>	<u>Method of Payment to the State</u>
Bureau of Land Management		
Zone I Timberlands	1,300,328	.315/Acre/Year
Zone II Watershed	682,811	.128/Acre/Year
Grazing District Lands	289,728	Fire Cost Reimbursement
Bureau of Indian Affairs	263,429	Fire Cost Reimbursement
Other Government	555,000	None
Forest Service	<u>434,542</u>	
Total	3,525,838	

C. Total Land Area Protected by the State

Zones I and II*	27,405,128
Zone III**	<u>6,165,727</u>
Total	33,570,855

*Includes all State, Private and intermingled Federal lands, which are directly protected by the State. The 13,248,487 acres of Clarke-McNary lands are included.

**Rural, agricultural, grazing and wildlands, not qualifying as state responsibility, but which are protected by the county concerned. Each county contracts for the degree of protection desired.

12. FOREST FIRE FATALITIES

Bruce Mecchi, forest firefighter died of injuries sustained when a truck on which he was riding went off a dirt road and rolled over while responding to a fire in Sonoma Ranger Unit, July 4, 1968.

13. The three major specific causes of fires reported under miscellaneous cause were:

- A. Children with matches - 494
- B. Powerlines 89
- C. Fireworks 46



